

CLAIMS:

What is claimed is:

1. Flow meter electronics, comprising:

a single port; and

5 a processing system coupled to said single port and configured to:

process signals from a flow meter to determine flow meter data;

generate a frequency output signal having a frequency that represents the flow meter data and transmit the frequency output signal over the single port if an output instruction comprises a frequency output instruction; and

10 generate a digital communication protocol signal that represents the flow meter data and transmit the digital communication protocol signal over the single port if an output instruction comprises a digital communication output instruction.

2. The flow meter electronics of claim 1 wherein said processing system is further

15 configured to:

determine a direction of flow of said material;

if said direction of flow is in a first direction, then generate said frequency output signal to have a duty cycle below 0.5; and

if said direction of flow is in a second direction, then generate said frequency output 20 signal to have a duty cycle above 0.5.

3. The flow meter electronics of claim 1 wherein said processing system is further

25 configured to:

determine if a fault has occurred; and

generate said frequency output signal to have a predetermined frequency responsive 30 to determining said fault.

4. The flow meter electronics of claim 1 wherein said processing system is further

configured to receive an input signal through the single port, with the input signal including 30 the output instruction.

5. The flow meter electronics of claim 1 wherein said processing system is further

configured to receive an input signal through the single port during a predetermined time period after a power cycle event, with the input signal including the output instruction.

6. The flow meter electronics of claim 1 wherein said processing system is further configured to receive an input signal through the single port during a predetermined time period after a power up event, with the input signal including the output instruction.

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7. The flow meter electronics of claim 1 wherein said flow meter data comprises a mass flow rate.

10 8. The flow meter electronics of claim 1 wherein said flow meter data comprises a

volumetric flow rate.

9. The flow meter electronics of claim 1 wherein said flow meter data comprises a net volumetric flow rate.

15 10. A method of operating flow meter electronics, comprising:

processing signals from a flow meter to determine flow meter data;  
generating a frequency output signal having a frequency that represents the flow meter data and transmitting the frequency output signal over a single port of the flow meter electronics if an output instruction comprises a frequency output instruction; and  
generating a digital communication protocol signal that represents the flow meter data and transmitting the digital communication protocol signal over the single port if an output instruction comprises a digital communication output instruction.

20 11. The method of claim 10 further comprising:

determining a direction of flow of said material;  
if said direction of flow is in a first direction, then generating said frequency output signal to have a duty cycle below 0.5; and  
if said direction of flow is in a second direction, then generating said frequency output signal to have a duty cycle above 0.5.

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30 12. The method of claim 10 further comprising:

determining if a fault has occurred; and  
generating said frequency output signal to have a predetermined frequency responsive to determining said fault.

13. The method of claim 10 further comprising:

receiving an input signal through the single port, with the input signal including the output instruction.

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14. The method of claim 10 further comprising:

receiving an input signal through the single port during a predetermined time period after a power cycle event, with the input signal including the output instruction.

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15. The method of claim 10 further comprising:

receiving an input signal through the single port during a predetermined time period after a power up event, with the input signal including the output instruction.

16. The method of claim 10 wherein said flow meter data comprises a mass flow rate.

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17. The method of claim 10 wherein said flow meter data comprises a volumetric flow rate.

18. The method of claim 10 wherein said flow meter data comprises a net volumetric flow rate.

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19. A software product for operating flow meter electronics, said software product comprising:

flow meter electronics software configured when executed by a processing system to direct the processing system to process signals from a flow meter to determine flow meter data, generate a frequency output signal having a frequency that represents the flow meter data and transmit the frequency output signal over a single port of the flow meter electronics if an output instruction comprises a frequency output instruction, and generate a digital communication protocol signal that represents the flow meter data and transmit the digital communication protocol signal over the single port if an output instruction comprises a digital communication output instruction; and

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a storage media configured to store said flow meter electronics software.

20. The software product of claim 19 wherein said flow meter electronics software is further configured to direct said processing system to:

determine a direction of flow of said material;

if said direction of flow is in a first direction, then generate said frequency output

5 signal to have a duty cycle below 0.5; and

if said direction of flow is in a second direction, then generate said frequency output signal to have a duty cycle above 0.5.

21. The software product of claim 19 wherein said flow meter electronics software is

10 further configured to direct said processing system to:

determine if a fault has occurred; and

generate said frequency output signal to have a predetermined frequency responsive to determining said fault.

15 22. The software product of claim 19 wherein said flow meter electronics software is further configured to direct said processing system to receive an input signal through the single port, with the input signal including the output instruction.

20 23. The software product of claim 19 wherein said flow meter electronics software is further configured to direct said processing system to receive an input signal through the single port during a predetermined time period after a power cycle event, with the input signal including the output instruction.

25 24. The software product of claim 19 wherein said flow meter electronics software is further configured to direct said processing system to receive an input signal through the single port during a predetermined time period after a power up event, with the input signal including the output instruction.

30 25. The software product of claim 19 wherein said flow meter data comprises a mass flow rate.

26. The software product of claim 19 wherein said flow meter data comprises a volumetric flow rate.

27. The software product of claim 19 wherein said flow meter data comprises a net volumetric flow rate.